

La Niña Winter Precipitation in the Upper Mississippi River Valley

Since the winter of 1949-50, La Niñas have been ongoing during twenty-one meteorological winters (December through February). The table below and continued on the next page contains the precipitation during these winters for 39 locations across northeast Iowa, southeast Minnesota, and western Wisconsin. It also compares this data to the 1981-2010 normal of 3.31 inches. The blue boxes indicate that the La Niña winter was drier than the 1981-2010 normal. The red boxes indicate that the La Niña winter was wetter than the 1981-2010 normal. The yellow boxes indicate that the La Niña winter was the same as the 1981-2010 normal. Finally, the green boxes indicate that there was no data for that location for that winter.

City	State	1949-1950	1950-1951	1954-1955	1955-1956	1956-1957	1962-1963	1964-1965	1967-1968	1970-1971	1971-1972	1973-1974	1974-1975	1975-1976	1984-1985	1988-1989	1995-1996	1998-1999	1999-2000	2000-2001	2007-2008	2010-2011	La Niña Average	1981-2010 Normal	Difference (1981-2010 Normal - La Niña Avg.)
Charles City	IA	4.83	5.36	2.00	1.51	1.22	1.66	3.58	2.60	5.64	2.17	2.92	3.34	1.77	3.11	1.80	1.95	2.46	2.83	4.76	4.01	4.84	3.06	3.81	-0.75
Cresco	IA	4.80	5.52	M	2.32	1.34	1.29	3.07	2.16	4.33	2.78	2.63	M	2.42	4.55	1.53	3.68	2.89	3.15	3.40	4.45	5.36	3.25	3.39	-0.14
Decorah	IA	4.10	3.87	1.30	1.70	0.82	1.34	2.76	2.16	5.26	2.58	3.82	4.25	2.66	3.09	0.80	M	2.23	M	3.85	3.33	5.49	2.92	3.00	-0.08
Elkader	IA	4.25	5.54	2.85	1.71	1.26	1.67	3.30	M	6.27	3.72	3.73	5.28	3.68	4.05	2.72	2.81	2.64	3.28	5.32	6.58	5.78	3.82	3.80	0.02
Fayette	IA	5.09	4.73	2.73	1.78	1.68	1.46	3.35	2.24	6.23	3.17	3.90	4.31	2.27	4.52	2.39	3.08	3.16	3.47	5.75	4.11	6.46	3.61	3.86	-0.25
Guttenberg Lock & Dam 10	IA	3.40	4.19	2.94	1.95	1.95	1.21	2.61	2.53	6.42	3.45	4.08	4.52	3.48	4.09	2.20	3.09	3.40	3.57	5.78	6.72	5.93	3.69	3.70	-0.01
New Hampton	IA	4.19	4.18	1.24	1.40	1.23	M	3.91	2.08	4.36	2.31	3.11	3.64	2.36	4.61	1.88	3.62	2.85	3.43	8.36	4.64	4.72	3.41	3.81	-0.40
Oelwein	IA	3.90	6.32	M	1.36	2.00	1.71	2.87	2.92	M	3.39	2.98	5.43	2.01	4.87	3.18	2.63	3.81	2.65	4.38	4.89	5.29	3.50	3.30	0.20
Osage	IA	5.05	3.84	3.53	3.38	2.06	1.53	3.33	1.28	5.99	2.88	3.12	3.29	1.80	2.55	1.43	M	M	M	3.65	4.38	5.85	3.27	2.78	0.49
Waukon	IA	2.09	3.49	0.96	0.81	M	0.91	M	2.00	3.59	2.57	1.90	2.50	1.18	M	1.74	M	M	2.65	4.63	7.66	7.70	2.90	3.54	-0.64
Austin	MN	2.87	5.12	3.15	3.06	1.01	1.93	4.44	M	5.97	4.19	3.19	M	M	M	M	M	M	4.06	6.71	2.65	4.65	3.79	3.00	0.79
Caledonia	MN	4.42	4.34	1.74	1.80	1.96	1.87	3.15	1.77	6.73	3.19	3.99	4.47	3.01	7.27	1.99	M	M	1.96	3.82	5.26	4.88	3.56	3.63	-0.07
Grand Meadow	MN	3.31	3.34	1.79	1.36	0.85	1.36	2.93	1.61	6.31	2.49	3.83	3.77	2.21	2.48	1.66	3.04	2.63	2.56	3.78	3.03	4.50	2.80	2.74	0.06
Preston	MN	M	M	1.27	1.80	0.69	4.99	4.55	3.86	5.43	2.08	4.22	3.19	2.12	M	M	3.78	3.09	2.89	4.23	4.04	5.09	3.37	3.53	-0.16
Rochester	MN	3.61	4.69	2.10	2.32	0.97	1.49	2.63	1.13	4.15	1.98	2.08	3.23	2.08	2.99	1.94	2.80	3.36	3.24	3.61	2.44	5.29	2.77	3.04	-0.27
Theilman	MN	3.09	3.95	1.97	1.36	1.17	1.36	M	1.07	3.75	1.80	2.31	3.72	1.66	3.20	1.71	M	M	2.61	4.00	3.69	5.03	2.64	2.92	-0.28
Winona	MN	2.80	3.12	0.94	1.41	1.20	1.29	2.16	0.82	4.86	1.75	2.84	3.35	2.00	3.99	1.38	3.25	2.84	2.78	3.27	3.93	4.03	2.57	2.92	-0.35
Alma Dam	WI	2.90	3.84	1.41	1.76	1.18	1.02	2.52	0.96	3.77	2.48	2.63	3.00	2.26	2.91	2.70	3.06	1.99	2.53	3.84	2.55	3.84	2.53	2.65	-0.12
Blair	WI	3.91	5.03	1.66	1.06	0.98	1.79	2.35	1.47	4.57	2.12	2.99	3.55	2.64	4.21	2.89	3.89	5.85	2.54	2.82	3.19	3.06	2.98	3.18	-0.20
Cashton	WI	3.60	3.85	0.95	1.63	1.02	1.03	2.04	M	5.28	3.10	M	4.11	4.19	M	M	3.94	3.87	1.79	2.72	4.36	M	2.97	3.46	-0.49
Dodge	WI	2.57	3.00	1.00	1.27	M	1.38	2.42	1.22	4.57	2.28	3.06	3.98	2.33	4.78	2.16	M	M	M	M	4.53	5.10	2.85	3.43	-0.58
Genoa Dam 8	WI	3.42	3.42	1.35	1.40	0.64	1.40	1.98	1.88	4.19	3.14	2.75	2.89	2.92	3.86	1.47	4.14	4.81	2.28	4.28	4.66	5.50	2.97	3.32	-0.35

City	State	1949-1950	1950-1951	1954-1955	1955-1956	1956-1957	1962-1963	1964-1965	1967-1968	1970-1971	1971-1972	1973-1974	1974-1975	1975-1976	1984-1985	1988-1989	1995-1996	1998-1999	1999-2000	2000-2001	2007-2008	2010-2011	La Niña Average	1981-2010 Normal	Difference (1981-2010 Normal - La Niña Avg.)
Hatfield	WI	3.51	3.76	1.49	M	1.18	1.46	3.21	1.32	6.05	3.93	3.47	3.92	2.68	4.71	1.88	M	M	M	M	5.31	M	3.19	3.55	-0.36
Hillsboro	WI	3.87	5.09	2.04	2.03	0.86	1.74	1.51	2.73	5.67	2.82	M	3.23	M	3.88	1.54	3.40	3.86	1.82	4.69	7.73	5.22	3.35	3.57	-0.22
La Crosse	WI	3.97	4.41	1.34	1.67	0.98	1.46	2.39	1.44	4.55	3.67	3.42	4.60	2.03	4.57	1.59	4.26	3.92	3.01	4.08	5.08	4.30	3.18	3.53	-0.35
Lancaster	WI	5.20	5.03	3.86	2.39	2.04	1.74	3.45	2.10	6.30	3.56	4.30	2.90	2.19	3.57	2.05	1.99	2.28	2.85	6.81	7.06	4.82	3.64	3.61	0.03
Lynxville Dam 9	WI	2.76	4.03	1.16	1.66	0.72	1.47	2.25	2.94	5.53	3.27	4.12	3.89	2.71	3.71	2.63	4.08	3.50	2.65	4.88	6.08	5.28	3.30	3.37	-0.07
Mather	WI	3.33	3.32	M	2.36	1.70	1.87	2.82	2.28	5.81	4.24	M	M	4.22	4.82	1.67	3.39	2.90	2.02	3.15	4.92	4.03	3.27	3.22	0.05
Mauston	WI	3.43	4.64	1.99	2.22	0.92	2.40	2.82	3.36	6.59	2.62	2.85	4.37	3.67	4.99	1.57	4.03	3.76	1.88	4.93	8.64	4.84	3.64	3.68	-0.04
Medford	WI	4.64	6.02	1.25	1.51	1.32	1.83	2.33	1.75	6.74	5.19	3.31	5.07	4.47	3.67	2.48	2.55	3.86	3.41	3.19	4.42	4.52	3.50	2.56	0.94
Mondovi	WI	2.28	3.61	1.68	1.63	1.63	1.58	2.70	1.14	2.68	2.68	2.48	2.71	2.88	4.52	2.13	3.87	2.80	2.91	M	4.12	4.37	2.72	3.33	-0.61
Necedah	WI	M	M	1.60	1.82	1.01	1.40	2.29	2.02	4.54	3.00	3.06	3.44	3.72	4.61	1.04	4.14	2.87	2.95	3.05	7.54	4.77	3.10	3.25	-0.15
Neillsville	WI	3.48	3.37	1.71	1.45	0.94	0.98	2.16	1.26	5.86	2.84	1.98	2.68	2.49	4.06	1.58	3.67	3.56	M	4.17	5.00	5.03	2.91	3.09	-0.18
Owen	WI	3.34	3.67	1.67	1.56	1.23	1.63	2.92	1.63	4.69	4.21	2.37	3.23	3.15	4.60	1.84	4.00	M	M	3.16	3.88	4.85	3.03	3.23	-0.20
Platteville	WI	4.75	4.55	3.70	2.69	1.98	1.76	0.94	2.55	5.74	4.90	4.66	4.01	3.35	5.17	3.04	3.63	3.39	3.20	4.93	8.56	6.05	3.98	2.48	1.50
Prairie du Chien	WI	4.70	4.95	2.46	1.89	0.92	1.96	2.63	3.38	5.81	3.24	M	4.17	3.11	4.32	2.42	3.71	2.75	3.09	5.33	6.58	5.59	3.65	3.75	-0.10
Richland Center	WI	4.46	5.75	2.72	1.98	1.40	1.77	2.39	3.18	6.51	2.94	4.03	4.78	4.21	3.97	1.74	3.12	3.95	2.78	4.43	6.88	4.41	3.69	3.56	0.13
Sparta	WI	2.72	3.72	1.03	1.39	0.82	1.56	2.66	1.78	6.05	3.65	2.92	3.89	3.76	M	M	2.94	M	2.08	3.47	5.28	3.91	2.98	2.91	0.07
Trempealeau Dam 6	WI	2.17	3.01	M	1.58	1.38	1.27	2.36	1.40	5.69	2.39	3.87	4.02	2.82	2.66	1.50	4.59	2.18	1.90	3.20	4.82	3.30	2.81	3.42	-0.61
All Site Average		3.70	4.32	1.90	1.79	1.25	1.62	2.75	2.00	5.33	3.05	3.23	3.80	2.77	4.09	1.95	3.42	3.25	2.75	4.35	5.05	4.96	3.21	3.31	-0.10

While temperatures in the United States are greatly influenced by La Niña's strength, precipitation typically is not. During La Niñas, the southern United States is typically drier than normal. Meanwhile, wetter-than-normal conditions are usually found across the Tennessee and Ohio River Valleys, and the Pacific Northwest. The one exception is that during moderate La Niñas, a secondary area of wetter-than-normal conditions can be found from eastern Kansas northwest into the western Great Lakes. This is due to the storm track being occasionally shifted further northwest from its typical track across the Tennessee and Ohio River Valleys.

The table on the next page compares the La Niña strength with the average winter precipitation for 39 locations across northeast Iowa, southeast Minnesota, and western Wisconsin. It shows that strong La Niña winters are typically (80.0%) drier than the 1981-2010 normal.

La Niña Strength Compared to Winter Precipitation

	La Nina Average Precipitation	1981-2010 Precipitation Normal	Diff	Min	Max	# Below the 1981- 2010 Normal	# Above the 1981- 2010 Normal	Total	% Below the 1981- 2010 Normal	% Above the 1981- 2010 Normal
Weak (9 Winters)	2.92 inches	3.31 inches	-0.38 inches	1.25 inches	4.35 inches	5	4	9	55.6	44.4
Moderate (7 Winters)	3.80 inches	3.31 inches	+0.49 inches	1.79 inches	5.33 inches	3	4	7	42.9	57.1
Strong (5 Winters)	2.88 inches	3.31 inches	-0.43 inches	2.88 inches	3.70 inches	1	4	5	20.0	80.0

Weak La Niña (Oceanic Niño Index -0.5 to -0.9) Winters: 1956-57, 1962-63, 1964-65, 1967-68, 1971-72, 1974-75, 1984-85, 1995-96, and 2000-01.

Moderate La Niña (Oceanic Niño Index -1.0 to -1.4) Winters: 1950-51, 1954-55, 1955-56, 1970-71, 1998-99, 2007-08, and 2010-11.

Strong La Niña (Oceanic Niño Index less than -1.5) Winters: 1949-50, 1973-74, 1975-76, 1988-89, and 1999-2000.